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ABSTRACT

This document contains four symposium papers on transfer of learning. In "Learning Transfer in a Social Service Agency: Test of an Expectancy Model of Motivation" (Reid A. Bates) structural equation modeling is used to test the validity of a valence-instrumentality-expectancy approach to motivation to transfer learning. "The Relationship between Learner Utility Reactions and Predictors of Learning Transfer: Implications for Evaluation" (Wendy E.A. Ruona, Michael Leimbach, Elwood F. Holton III) explores the relationship between learner utility reactions and predictors of learning transfer in light of new research on transfer of learning. "Mixed Methods: The Value of the Qualitative Perspective in Transfer of Training Research" (Gary L. May) provides an example of how a qualitative method, namely, analysis of data from semistructured interviews through conceptually ordered matrices, can illuminate quantitative data gathered from the same setting. "Theories Supporting Transfer of Training" (Siriporn Yamnill, Gary N. McLean) reviews the theories and conceptual frameworks needed to describe three factors affecting transfer of training: training inputs (trainee characteristics, training design, and work environment); training outputs (learning and retention); and conditions of training transfer (generalization and maintenance of training). (MN)

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36-1 Learning Transfer in a Social Service Agency: Test of an Expectancy Model of Motivation

Reid A. Bates, Louisiana State University

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36-2 The Relationship Between Learner Utility Reactions and Predictors of Learning Transfer: Implication for Evaluation

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36-3 Mixed Methods: The Value of the Qualitative Perspective in Transfer of Training Research

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36-4 Theories Supporting Transfer of Training

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Learning Transfer in a Social Service Agency: Test of an Expectancy Model of Motivation

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Valence-instrumentality-expectancy (VIE) theory of motivation has been frequently used to study work motivation but has not been applied to motivation to transfer research. In this study, a VIE approach to motivation to transfer is tested using structural equation modeling in a sample of 705 state social service agency personnel. Employees completed the Learning Transfer System Inventory (LTSI). Results indicated that utility predicted motivation to transfer, but rewards did not. Self-efficacy was not a significant predictor of motivation. The VIE model provided a strong fit to the data.

Keywords: Transfer, Expectancy Theory, Motivation

Training alone will do little to increase individual or organizational performance unless what is learned as a result of training is transferred into on-the-job behavior. Including indirect costs, public and private sector organizations in recent years have spent over $200 billion annually on formal workplace training (Bassi, Gallagher, & Schoer, 1996). Of this expenditure, only 10% is projected to pay off in performance improvements resulting from the transfer of learned knowledge, skills, and abilities to the job (Baldwin & Ford, 1988). Although the exact amount of transfer is unknown, learning transfer is the most frequently cited reason why training fails (Broad & Newstrom, 1992). However, knowledge is limited about when, why or how the dynamics of learning transfer work.

A fundamental area in which current transfer research is deficient is in modeling the learning-transfer process. Researchers have recognized the necessity of building comprehensive, integrated models of the learning-transfer process in order to fully understand and reliably identify the causes and effects of training success or failure (Holton, 1996). Researchers examining various models of learning transfer in organizations have produced findings indicating that a variety of individual, process, and environmental variables can significantly affect an individual's ability and motivation to transfer learning to job performance. For example, research by Noe and Schmitt (1986) suggested that trainee reactions to training may either mediate or moderate relationships between intervening variables and training outcomes. Learning has been shown to be related to transfer behavior (Rouiller & Goldstein, 1993) and self-reported increases in productivity (Xiao, 1996). Trainee characteristics including age, self-efficacy, and confidence have also been identified as important factors influencing learning transfer. Other studies have indicated perceived relevance of training is a significant design variable supporting transfer. Studies also point to the importance of work environment factors such as supervisor support, rewards, and opportunity to perform which indicate the important role that individual perceptions of specific organizational elements, often referred to as transfer climate, have in facilitating transfer. In addition, research suggests that an organization's continuous learning culture, or the shared perceptions about a broad, comprehensive set of organizational elements (e.g., values and beliefs) can also play a role in transfer (Tracy, Tannenbaum, & Kavanaugh, 1995). Taken together, research portrays transfer as a complex process and explicitly recognizes the value of useful models.

Unfortunately, only limited research has been done with these models and none have been validated by further research. This may partially explain why 1) our understanding of the transfer of training process is still greatly restricted; 2) theorizing about transfer of training has not produced many generalizable principles; and 3) there is currently no generally accepted theoretical model of learning transfer in organizations. Until more work is done to develop, test, and refine learning transfer models, we will be unable to make significant progress in this important area of research.

The Role of Valence-Instrumentality-Expectancy in Learning Transfer

Motivational factors are among the most efficient predictors of training-related performance, but have generally received little research attention (Latham, 1988). Several authors have noted the need for more research directed at individual and situational factors that influence motivation and have suggested the usefulness of the valence-instrumentality-expectancy (VIE) theory for studying training-related motivation (Baldwin & Ford, 1988). Some

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research has heeded this call. Noe and Schmitt (1986) examined a number of motivational influences on training effectiveness including the impact of expectancies on motivation to learn. Mathieu, Tannenbaum, and Salas (1992) adopted an instrumentality approach that examined the influence of trainees' perceptions that success in training would lead to better job performance and then to valued outcomes. In general, the VIE approach to training-related motivation is valuable because it facilitates the study of both individual and situational factors and their relationship to expectancy perceptions.

Valence-Instrumentality-Expectancy (VIE) is a "decision theory of human motivation and choice in the work situation" (House, Shapiro, & Wahba, 1974). A core concept of VIE theory is that the psychological interaction of an individual's beliefs about expectancies, instrumentalities, and valences create a motivational force to act in ways that maximize benefit and minimize pain (Vroom, 1964). According to the VIE model, an individual chooses behaviors and level of effort based on three key mental components: 1) the value (valence) he/she perceives to be associated with the outcomes of the behavior; 2) the belief that a certain performance level will lead to other outcomes (instrumentality); and 3) the strength of an individual's belief that attaining a certain outcome is possible (expectancy). These three components represent beliefs held by an individual about effort-reward connections.

Figure1: Expectancy Model of Motivation to Transfer Learning

An expectancy model of factors influencing motivation to transfer, consistent with Lawler's (1971) modification of Vroom's (1964) original theory, is shown in Figure 1. The relationships in the model are similar to those suggested in a training research and evaluation model proposed by Holton (1996). Motivation to transfer is seen as a function of 1) utility, or expectancy beliefs about extent to which learning in training is expected to have useful job application; and 2) rewards, or the extent to which the application of learning on-the-job is perceived to result in some valued outcome for the individual. Learning with high utility value is more likely to be associated with high reward potential, suggesting a dependency relationship between utility and rewards.

Hypothesis 1a: Utility will be positively associated with motivation to transfer.
Hypothesis 1b: Rewards will be positively associated with motivation to transfer.
Hypothesis 1c: Utility will be positively associated with rewards.

Motivation to transfer was also hypothesized to be partially a function of a person's self-efficacy beliefs concerning learning transfer. In general, self-efficacy refers to an individual's belief in his or her ability to mobilize personal resources and courses of action to meet specific situational and task demands (Gist, 1987). This construct is seen as a potential intervening variable between training and performance in addition to being a useful self-construct for predicting performance on specific tasks. Researchers have reported significant positive correlations between level of self-efficacy and task performance, training performance, post-training transfer, and job performance. Research has also demonstrated a self-efficacy - performance relationship for both cognitive (Gist, Bavetta, & Stevens, 1990) and interpersonal skills (Gist, Schoerer, & Rosen, 1989).

Hypothesis 2a: Performance self-efficacy will be positively associated with motivation to transfer.
Hypothesis 2b: Performance self-efficacy will be positively associated with utility.

Method

Subjects Participants in this study were 705 social service caseworkers from geographically dispersed units in a state Office of Family Support. For reasons of confidentiality, neither the identification of the units responding in this study nor the number of participants from specific units was obtained. The participants were part of a larger study to assess the obstacles to training transfer in the Department of Social Services and other state governmental departments.

Analysis Structural equation modeling (SEM) with LISREL 8 (Joreskog & Sorbom, 1993) was used to test the causal relationships between variables. The application of SEM provides a way to 1) model and estimate multiple and interrelated causal relationships, and 2) represent unobserved variables or concepts in these relationships and account for measurement error in the estimation process (Hair, Anderson, Tatham, & Black, 1998). One advantage of LISREL is that it provides tests of relationships between constructs that are not attenuated by measurement error (Loehlin, 1987).

Following a procedure suggested by Anderson and Gerbing (1988) and Hair et al. (1998), data analysis was conducted in two stages. First, the adequacy of the measurement model was examined to evaluate the contribution of each item to the construct (latent variable) being measured. This is equivalent to a confirmatory factor analysis of the measured constructs. Second, the structural model was examined to test the fit of the hypothesized model with the data. For both the measurement and structural models, a wide variety of goodness-of-fit indices are available for assessing model fit. To assess overall model fit, the chi-square statistic (χ^2) and the goodness-of-fit index (GFI) were examined. The root mean square error of approximation (RMSEA), a goodness of fit measure relatively insensitive to sample size, and the root mean square residual (RMR), were examined as complementary measures to the GFI and χ^2. The non-normed fit index (NNFI) represents the incremental fit obtained by comparing any two nested models. The adjusted goodness-of-fit (AGFI) was evaluated because it adjusts the GFI by the degrees of freedom in order to consider the parsimony of the model. To compare the model's fit in relation to the worst and best fit attainable from other nested models, the normed-fit index (NFI) was examined. In general, a good fit of the data is indicated by RMSEA and RMR values that approach zero (with those larger than .08 as unsuitable), and GFI, AGFI, NNFI, and NFI values that approach 1, with values less than .90 indicating the potential for substantial improvement (Medsker, Williams, & Holahan, 1994). Finally, the coefficient of determination (R^2) was examined in relation to the structural model as an indicator of variation accounted for, not of model fit per se.

Measures All measures used in this study were obtained using the Learning Transfer System Inventory (LTSI), formerly called the Learning Transfer Questionnaire (LTQ) (Holton, Bates & Ruona, 1999; Holton, Bates, Ruona, & Leimbach, 1998). The LTSI consists of sixteen scales representing factors affecting the transfer of learning to work performance. Scales represent motivational, ability and environmental elements. The scales have shown good reliability and initial evidence of criterion validity in earlier versions of the instrument (Bates, Holton & Seyler, 1997; Seyler, Holton, Bates, Burnett & Carvalho, 1998). All items use a five point Likert-type scale ranging from "strongly disagree" to "strongly agree." Because it is generally suggested that a minimum of three indicator variables be used for each latent construct (Hair, et al., 1998), seven scales were initially selected as indicators for rewards and utility.

Utility indicators - Three scales served as indicators for utility:

1) Transfer-effort performance expectations (TEPE) – the expectation the effort devoted to transferring learning will lead to changes in job performance.
2) Performance outcome expectations (POE) – the expectation that changes in job performance will lead to outcomes valued by the individual.
3) Content validity – the extent to which individuals judge the content of training to accurately reflect job requirements.

VIE models in current use generally break expectancy connections into two key components: the expectancy that effort will lead to successful performance (transfer effort - performance expectancy) and the expectancy that this performance will produce valued outcomes (performance outcome expectancy) (Lawler, 1971). High TEPE is expected to be positively associated with utility: individuals believe learning is useful because its application will improve their performance. High POE is also expected to be positively associated with utility. Thus, learning is useful because it improves performance and subsequently leads to outcomes that are valued by the individual.

A key aspect of learning transfer relates to the degree the content and design of the learning experience enables individuals to apply their learning. Training content that accurately reflects job requirements, addresses work-related performance problems, or facilitates work-related goals is more likely to be applied than that which does not (Baldwin & Ford, 1988). Valid training content is therefore believed to influence motivation to transfer by virtue of its perceived job-relevant utility.

Reward indicators - Four scales served as indicator measures of the latent construct rewards:

1) Openness to change – the extent to which prevailing group norms are perceived by individuals to resist or discourage the use of knowledge and skills acquired in training.
2) Supervisor support – the extent to which supervisors support and reinforce the use of learning on-the-job.
3) Peer support – the extent to which peers reinforce and support the use of learning on-the-job.
4) Negative personal outcomes – the extent to which individuals believe that applying skills an knowledge learning in training will lead to outcomes that are negative. The negative personal outcomes scale was reverse coded so that that high scores indicated the extent to which individuals believed that applying learning on-the-job would not lead to outcomes perceived as negative. All other scales used in this study were scored so high scores represented high levels of the construct.

Tracy et al. (1995) demonstrated transfer behavior could be influenced by employee beliefs that their organization values the importance of ongoing knowledge acquisition and use. Studies by Baumgartel and associates (Baumgartel & Jeanpierre, 1972; Baumgartel, Reynolds, & Pathan, 1984) showed that perceptions of organizational growth orientation, freedom to set personal goals, non-restrictive rules and procedures, encouragement of risk-taking and approval of innovation and experimentation, and rewards were closely associated with high transfer rates. The present study tests whether peoples' expectancy perceptions can be influenced by their perceptions that their organization values and rewards learning, innovation, and transfer. We expect the more an organization positively rewards learning and its job application, the more individuals will recognize those rewards and be motivated by them.

Although virtually unstudied in HRD research, there is some indication that work group norms may be an important factor in learning transfer. Openness to change refers to the extent to which prevailing group norms are perceived by employees to resist or discourage the use of new learning and skills. An openness to change construct has been found to be significant predictor of supervisor ratings of transfer behavior (Bates, 1997). Research investigating conceptually similar variables has shown that openness to experience (Barrick & Mount, 1991) and participants' belief that the application of new knowledge and skills would disrupt the functioning of current workgroups (Hastings, Scheckley, & Nichols, 1995) are important factors in understanding knowledge acquisition and use. To the extent that people believe their workgroup supports change, they will also believe the effort they expend to make change will pay off in improved performance. Thus, an individual's perceptions of his or her workgroup's openness to change are expected to directly influence reward expectations.

The importance for transfer of support behaviors exhibited by supervisors and peers has been suggested by a number of authors. Bates (1997) found interpersonal support behaviors (e.g., peer support, supervisor opposition to the use of new skills) to be among the most powerful predictors of supervisory ratings of learning transfer. Other research points to the significant influences that supportive supervisor behavior can have on the use of new learning on-the-job (Broad & Newstrom, 1992). Although indications are that supervisor and peer support can play a strong role in learning transfer, more research is needed to establish both their value and precise causal role. Motivationally, these factors are important because they may impact an individual's expectations and beliefs about the value of learning transfer (Farr & Middlebrooks, 1990). Thus, individuals receiving support for learning transfer from peers or supervisors may believe it will result in better job performance. Since supervisors also commonly have some control over extrinsic (e.g., pay, praise) rewards, their support may influence reward expectations. Under

working conditions with relatively high levels of co-worker interaction and interdependence (e.g., self-managing work teams), peers and co-workers may have similar kinds of control.

Motivation to transfer - The motivation to transfer measure was assessed using four items on the LTSI. Unlike the seven initial indicator variables, these items were entered into the measurement model as indicator variables to allow LISREL to calculate the reliability.

Performance self-efficacy - This variable was initially assessed with four items from the LTSI, entered into the measurement model just like motivation to transfer. Procedure Data were collected from a single questionnaire distributed to the different Family Support units by unit Directors. Unit Directors attended a meeting in which the researchers explained the objectives of the questionnaire and provided Directors with guidelines for distributing the questionnaire to their caseworkers. Respondents were instructed to complete the questionnaire within five days and return it via enclosed stamped and addressed envelope to the researchers. The instrument was administered to 905 individuals with 784 questionnaires returned for an 86.6% response rate.

Results

Measurement model A covariance matrix was used for both measurement and structural model tests. The analysis of the measurement model was conducted in two steps. First, confirmatory factor analysis was conducted on all scales in the LTSI with this data. This analysis produced a chi-square value of 2020.52 ($df = 783$, $p < .001$). Other fits indices included GFI = .85, AGFI = .83, NFI = .84, NNFI = .88, RMSEA = .054, and RMR = .049. These values indicated the fit between the proposed measurement model and the observed data were not strong but deemed adequate to proceed. All items loaded on their a priori determined factor and all the lambda values (similar to factor loadings) were statistically significant.

Next, given an acceptable fit from the confirmatory factor analysis, the number of parameters in the final model was reduced by entering the scale scores for the seven indicator variables instead of entering all the items in the model. This created a new measurement model with the seven indictors for the utility and reward latent variables, plus the eight items as indicators for motivation to transfer and performance self-efficacy. This measurement model was also analyzed, producing a chi-square value of 299.31 ($df = 84$, $p < .001$).). Other fits indices included GFI = .94, AGFI = .91, NFI = .89, NNFI = .90 RMSEA = .066, and RMR = .038. These values indicate a good fit for the measurement model so analysis of the structural model proceeded.

Table 1 shows the intercorrelations of observed and latent variables and the scale reliabilities on the diagonals. All scales had adequate reliabilities ($\alpha = .78$ to $.90$).

Table 1: Correlations Among Observed Variables and Latent Variables

Observed	1	2	3	4	5	6	7	*Latent*	1	2	3	4
1- Content Validity	--							1- Utility	--			
2- Openness Change	.23	--						2- Rewards	.75	--		
3- Peer Support	.34	.27	--					3- Mot Transfer	.76	.50	--	
4- Supervisor Support	.28	.20	.43	--				4- Perf Self-Eff	.38	.29	.27	--
5- POE	.39	.21	.38	.44	--							
6- Neg Pers Outcome	.23	.09	.32	.26	.25	--						
7- TEPE	.43	.14	.36	.29	.42	.16	--					

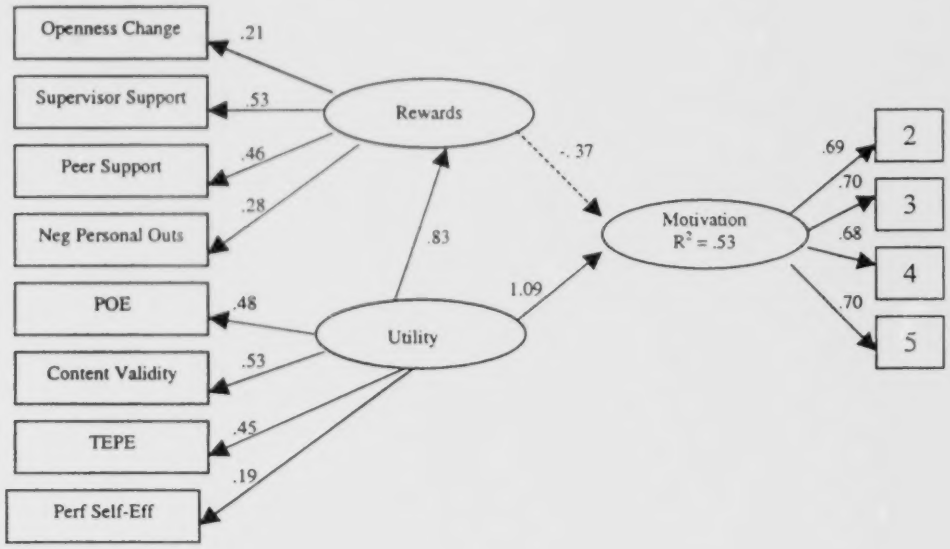
Structural model Five paths were tested in the initial structural model (see Figure 1). The initial structural model produced a chi-square value of 299.31 ($df = 84$, $p < .001$). The GFI (.94), AGFI (.91), NFI (.89), NNFI (.90), RMSEA (.066), and RMR (.038) indicated acceptable fit. The overall R^2 for the model was .53. However, two of the paths were not significant: Rewards to Motivation to Transfer and Performance self-efficacy to Motivation to

Transfer. Thus, the hypothesized influence of performance self-efficacy on motivation to transfer was not supported.

A revised model was analyzed removing the path from performance self-efficacy and changing it to an indicator of utility using its scale score. The path from rewards to motivation to transfer was left intact as there is strong theoretical rationale for it. In addition, this sample is a public sector organization within which few rewards existed for any type of performance improvement.

The revised structural model, shown in Figure 2, produced a chi-square value of 172.16 ($df = 51$, $p < .001$). The fit indices improved somewhat with a GFI (.95), AGFI (.93), NFI (.91), NNFI (.92), RMSEA (.063), and RMR (.029). All are indicative of strong fit. The overall R^2 for the model was .53. All paths to indicator variables were significant and in appropriate ranges. The path from Rewards to Motivation to Transfer was non-significant (B = -.17).

Figure 2: Structural Model with Path Coefficients



Discussion

Despite the popularity of expectancy theory as a foundation for understanding training-related behavior, constructs representing various elements of the theory have not previously been developed and tested in the context of learning transfer. In this study, utility was a significant predictor of learning transfer motivation. Individuals were more motivated to apply learning on the job when they perceived that transferring learning would be useful in helping them improve their job performance. This finding partially supports an expectancy theory approach to understanding learning transfer motivation and has direct implications for diagnosing a learning transfer situation and changing aspects of the situation to obtain higher levels of effort from trainees. According to expectancy theory as applied in this study, learning must be perceived as job-relevant if individuals are to be motivated to apply it. Training perceived to have little or no utility would also have little motivational value. Thus, by examining individual expectancies, investigators can begin to identify motivational problems and opportunities in training situations. Research suggests a number of techniques for enhancing utility expectations including appropriately framing the purpose of training (Quinones, 1995), demonstrating organizational support for training (McFarlane, Shore, & Wayne, 1993), discussing negative pre-training events (Smith-Jentsch et al., 1996), providing trainees the opportunity to be involved in training design (Clark, Dobbins, & Ladd, 1993), and communicating supervisory expectations of trainee performance in training (Eden & Ravid, 1982).

Rewards were not a significant predictor of motivation to transfer in this study, contrary to what would be expected from expectancy theory. One explanation is that this is a function of the sample which was drawn from a

state social service agency. In the state civil service system, there are few direct rewards for performance so participants may have perceived few rewards for participating in training. In addition, skills and training performance are not usually part of the performance review process, hence supervisors would offer few formal rewards for training transfer.

Contrary to the hypothesized moderating role of self-efficacy, the lack of a significant positive association with motivation suggests the influence of self-efficacy on transfer motivation may be primarily through utility perceptions. Performance self-efficacy was found to be positively associated with utility, indicating that individuals who felt confident in their ability to apply new learning also viewed learning as more useful. Thus, boosting an individual's self-efficacy with regard to their ability to change performance can indirectly enhance the likelihood that learning will be transferred.

These results show that the VIE framework is a useful one for predicting motivation to transfer. However, private sector data are needed to further test the reward-motivation to transfer relationship which was not significant in this public sector sample.

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The Relationship Between Learner Utility Reactions and Predictors of Learning Transfer: Implications for Evaluation

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Participant reaction measures are increasingly shown to be insufficient and unreliable indicators of training effectiveness. Highly overused in practice, we now see that reaction measures have fostered a narrow view of evaluation and neglected important aspects that influence HRD outcomes of learning, performance, and organizational results. New research on transfer of learning is contributing to enhanced understanding in this area. This study explores the relationship between learner utility reactions and predictors of learning transfer.

Keywords: Reaction Measures, Evaluation, Transfer of Learning

Reaction measures remain one of the most overly-used methods of evaluation in the field of HRD today. A recent benchmarking survey completed by ASTD found that 94% of the organizations surveyed collected participant reaction information, 34% measured learning, 13% evaluated transfer of learning, and 3% measured financial impacts from training (Bassi, Benson, Cheney, 1996). It seems that many organizations persist in believing that participant reactions are valid and reliable indicators by which to audit the effectiveness of training.

These statistics are alarming since recent literature has focused on critiquing Kirkpatrick's (1994) evaluation model which advocates evaluating interventions at four levels: reaction, learning, behavior change, and results (Kaufman & Keller, 1994; Holton, 1996; Phillips, 1995). Even more importantly, research has consistently informed us that there is little correlation between reaction and learning, and even less between reaction and performance (Alliger, Tannebaum, Bennett, Traver & Shotland, 1997; Alliger & Janak, 1989; Dixon, 1990; Noe & Schmitt, 1986; Warr & Bunce, 1995). The consensus among many in HRD is that "evaluation as currently conceptualized, practiced, and researched, is not sufficient for answering many of the questions trainers and others have about the effectiveness of organizations' training and development efforts" (Preskill, p. 53, 1997).

One glaring shortcoming of the current conceptualization of evaluation is that it neglects important aspects that influence HRD outcomes of learning, performance, and organizational results (Holton, 1996). Without this kind of pertinent information, HRD professionals continue to narrowly understand evaluation of training and continue to make costly decisions based on reaction-level information only. The purpose of this research is to expand notions of training criteria and evaluation by exploring the relationship between learner utility reactions and predictors of learning transfer.

Review of Literature

Reaction Measures

Discussion about the insufficiency of reactions measures has been prevalent in the literature since the late 1980's. Noe and Schmitt (1986) determined that trainee satisfaction was not related to learning, and learning was not related to behavior change. Dixon (1990) found no significant relationship between trainee **perceptions** of job relevance, amount learned, enjoyment, or instructor skillfulness and subjects' post-test scores. Warr and Bunce determined that there was no association between reported enjoyment and learning scores (1995). Strong corroboration is found in a recent meta-analytic study conducted by Alliger, et al (1997). An analysis of 34 studies

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yielding 115 correlations found little correlation between reactions of any type and immediate learning and concluded that "reaction measures cannot be used as surrogates of other measures" (p. 353).

Transfer of Learning

Transfer of learning is defined as the degree to which trainees apply knowledge, skills, behaviors, and attitudes learned in training to their jobs. Although there are multiple definitions of transfer of learning, it is generally agreed upon that transfer involves the application, generalizability, and flexibility of new knowledge/skills.

Research during the last 10 years has demonstrated that transfer of learning is complex and involves multiple factors and influences (Noe, 1986; Baldwin & Ford, 1988; Rouiller & Goldstein, 1993; Ford & Weisbein, 1997; Holton, Bates, Ruona & Leimbach, 1997,1998). Three categories of factors that are thought to impact transfer of training include (1) trainee characteristics, including ability, personality, and motivation; (2) training design, including a strong transfer design and relevant content; and (3) work environment, including work processes, support systems, and incentives (Baldwin & Ford, 1988).

These factors are currently being studied as critical components of the transfer system—the network of factors affecting transfer of learning to performance. The Learning Transfer System Inventory (LTSI) has been developed to operationalize the learning transfer system (LTS) and develop a valid and generalizable set of transfer system scales (Holton, Bates & Ruona, 1998a; Holton, Bates, Ruona & Leimbach, 1998b). The instrument's conceptual frame (see Figure 1) is derived from Holton's (1996) proposed evaluation model and includes what are believed to be a comprehensive set of factors that can facilitate or inhibit transfer of learning to workplace performance.

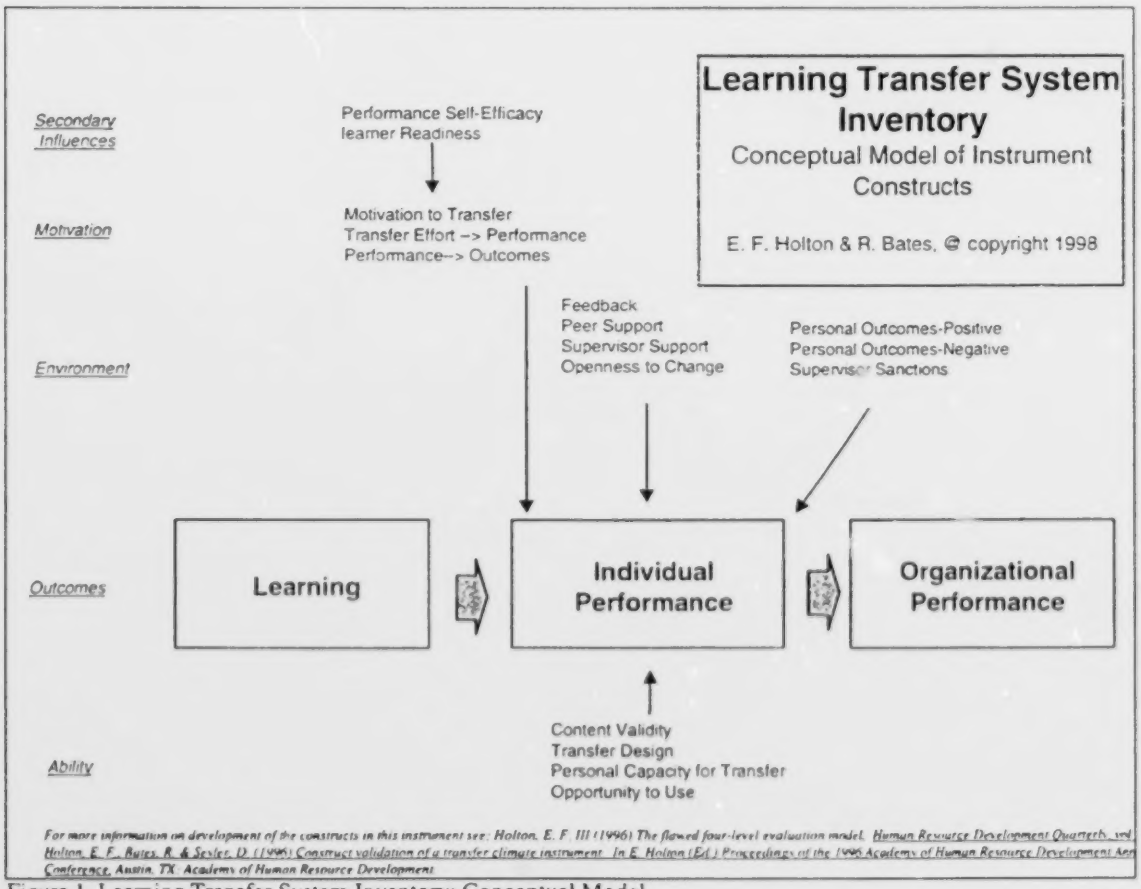
Learning Transfer System Inventory
Conceptual Model of Instrument Constructs
E. F. Holton & R. Bates, © copyright 1998
Secondary Influences
Performance Self-Efficacy
learner Readiness
Motivation
Motivation to Transfer
Transfer Effort –> Performance
Performance--> Outcomes
Environment
Feedback
Peer Support
Supervisor Support
Openness to Change
Personal Outcomes-Positive
Personal Outcomes-Negative
Supervisor Sanctions
Outcomes
Learning
Individual Performance
Organizational Performance
Ability
Content Validity
Transfer Design
Personal Capacity for Transfer
Opportunity to Use
For more information on development of the constructs in this instrument see: Holton, E. F. III (1996) The flawed four-level evaluation model. Human Resource Development Quarterly, vol.
Holton, E. F., Bates, R. & Seyler, D. (1996) Construct validation of a transfer climate instrument. In E. Holton (Ed.) Proceedings of the 1996 Academy of Human Resource Development Am
Conference, Austin, TX: Academy of Human Resource Development

Figure 1. Learning Transfer System Inventory: Conceptual Model

This conceptual framework of factors affecting transfer of learning provides a unique framework by which to further understand participant reactions and how they relate to outcomes of learning, individual performance, and organizational performance.

Research Questions

The purpose of this study is to compare participant utility reaction information to information about other elements of the transfer system. Specifically, two research questions guided the research:

1. How were participant utility reaction ratings associated with ratings on predictors of learning transfer?
2. What percent of the variance in motivation to transfer learning is explained by participants' utility reaction ratings?

Methodology

Instrumentation

Participants were asked to complete The Learning Transfer System Inventory (LTSI) at the end of training programs they attended. This instrument, which has been recently construct-validated (Holton, Bates, Ruona & Leimbach, 1998a), consists of a pool of 69 items designed to measure 16 factors hypothesized in the HRD Research and Evaluation Model (Holton, 1996) shown in Figure 1. In previous research (Holton, et al, 1998b) the LTSI has been shown to reliably measure all 16 factors hypothesized in the LTS model. All factors are measured by at least three individual items. Cronbach alpha reliability coefficients were acceptable for early stage instrument development, ranging from .63 -.91, with all but two greater than .70.

At the same time, participants were also asked to complete a five-item reaction scale designed to measure participants' reactions to the training program. The items on this scale addressed primarily utility reactions. Utility reaction measures "attempt to ascertain the perceived utility value, or usefulness, of training for subsequent job performance" while affective reactions consist of items that explore participant satisfaction or liking of the course (Alliger et al, 1997, p. 344). Alliger's research suggests that utility reactions are more closely associated with transfer than affective reactions and, therefore, we chose five reaction items from a pool of items commonly applied to evaluate corporate training programs. These items were:

- My time was well spent;
- The session objectives were met;
- I would recommend this program to others in my organization;
- I learned something I can apply immediately to my work;
- The course provided me with new ways of thinking about my job.

Data from the utility reaction scale, combined with data measuring participants' perceptions of the transfer system factors, provides additional evidence about the role of reaction information in ascertaining the potential effectiveness of training and development interventions.

Sample

The LTSI was administered to 1,616 people in a wide variety of organizations and training programs. The sample was deliberately chosen to be as heterogeneous as possible (see Table 1). It includes respondents from a variety of industries including: shipping, power, computer/precision manufacturing, insurance, chemical, industrial tool/construction, non-profit, and municipal and state government. The municipal and state government classes were offered by a central training organization, so the classes included representatives from a wide variety of agencies and functions.

A wide range of employees attended various training programs. These included secretaries, manufacturing operators, technicians, engineers, managers, professionals, sales people, and law enforcement personnel. The training programs covered a wide variety of topics including sales, safety, volunteer management, project

management, computer and technical skills, quality science, emergency medicine education, and various classes related to leadership, mid-management, and supervision.

Analysis-*Research Question #1*

Pearson product-moment correlations were used to explore the linear association between the utility reaction scale and each of the sixteen constructs measured by the LTSI.

Analysis-Research Question #2

Examining participant utility reactions within the context of other transfer of learning factors can be tested in a number of ways. In this study, analysis was conducted to determine if participant utility reactions added any predictive power after other transfer of learning factors were taken into consideration. This is an appropriate test in that participant utility reactions are the most general, and therefore, hypothesized as the least useful in diagnosing barriers to transfer. The test was conducted by using a forced entry method. The LTS factors were all entered into the regression equation prior to the entry of participant utility reactions. This allowed us to determine if the participants' utility reactions can add to the multiple-R after other, more specific transfer of learning factors, were already accounted for.

Table 1

Selected Demographics

Organization Type	n	%	Training Type	n	%
For Profit Organization	432	26.7	Technical Skills	544	33.7
Non-profit Organization	192	11.9	Sales/Cust Serv	434	26.9
Public Training Classes (mostly for-profit)	316	19.6	Volunteer Mgt.	192	11.9
Government (State = 175 and local = 501)	676	41.8	Leadership/Mgt.	175	10.8
			Professional Skills	80	5.0
			Supervisory Skills	67	4.1
			Clerical	62	3.8
			Communication	44	2.7
			Computer	18	1.1
TOTAL	1616	100.0	TOTAL	1616	100.0

Results

Research Question #1: Correlations Between Transfer of Learning and Participant Utility Reaction Table 2 shows the Pearson product-moment correlations between the Participant Utility Reactions and the sixteen LTSI factors. All correlations were significantly different from zero ($p < .001$ for all correlations) and ranged from a high of $r = 0.619$ (Transfer Design) to a low of $r = -0.156$ (Manager Sanctions).

Table 2

Correlations Between Participant Utility Reactions and Transfer of Learning Factors

	Participant Utility Reactions	Sig.
Transfer Design	.619	**
Motivation to Transfer	.554	**
Transfer Effort	.480	**
Perceived Content Validity	.456	**
Performance Self-Efficacy	.358	**
Opportunity to Use Learning	.349	**
Outcomes Expectations	.303	**
Peer Support	.277	**
Feedback	.260	**
Personal Capacity for Transfer	.211	**
Supervisor Manager Support	.211	**
Learner Readiness	.167	**
Personal Outcomes – Positive	.121	**
Personal Outcomes – Negative	- .091	**
Resistance/Openness to Change	- .115	**
Manager Sanctions	- .156	**

** = $p < .001$

The strongest correlations appeared to be with the Motivational and Ability antecedents to the training event. All of the Environmental factors were in the lower half of the correlation set. Among the Ability factors, the strongest correlations were with Transfer Design ($r = 0.619$), and Content Validity ($r = 0.456$). Among the Motivational factors the strongest correlations included Motivation to Transfer ($r = 0.554$), Transfer Effort-Performance Expectations ($r = 0.480$), and Performance Self-Efficacy ($r = 0.358$).

Research Question #2: Predicting Motivation to Transfer. A forced entry multiple regression procedure was used in which Participant Utility Reactions were entered last after all the transfer of learning factors. Participant Utility Reactions were forced to enter the predictive equation last, after all of the variability associated with the Transfer of Learning constructs was accounted for. The results of this analysis are presented in Table 2. Results indicate that Participant Utility Reactions had a small, but significant impact on the ability to predict Motivation to Transfer. Entry of Participant Utility Reactions raised the multiple-R from $R = .641$ (without Participant Utility Reactions) to $R = .679$ ($F = 87.88$, $p < .001$).

Table 3

Multiple-Regression Results of Transfer Climate Factors Predicting Participant Utility Reactions

	R	Adjusted R^2	F
Transfer of Learning Factors	.641	.405	76.98*
Participant Utility Reactions	.679	.460	87.88*

* = $p < .001$

Addition of Participant Utility Reactions to the regression equation increased the amount of variability accounted for by .038 which was a significant increase in R^2. Table 4 shows the Beta-weights for each factors. Step 1 results show the standardized beta coefficients of the LTSI factors before entry of participant utility reactions. Step 2 results show the Beta coefficients after the entry of participant utility reactions.

Table 4

Factor Betas From Multiple-Regression of Transfer Climate Factors Predicting Motivation to Transfer

	Step 1 Results		Step 2 Results	
	Standardized Beta	t	Standardized Beta	t
Learner Readiness	.010	0.47	.013	0.64
Personal Outcomes – Positive	.224	9.49*	.202	8.91**
Personal Outcomes – Negative	.105	4.82**	.062	2.91**
Peer Support	.099	3.92**	.096	3.97**
Supervisor Manager Support	.046	2.02*	.045	2.09*
Manager Sanctions	.005	0.219	.001	0.03
Perceived Content Validity	.025	4.19**	.069	2.66**
Transfer Design	.148	5.65**	.023	0.85
Opportunity to Use Learning	.008	0.346	.004	0.17
Transfer Effort	.254	10.01**	.209	8.48**
Outcomes Expectations	.113	4.10**	.085	3.21**
Resistance/Openness to Change	.112	4.61**	.082	3.50**
Performance Self-Efficacy	.082	3.51**	.057	2.55*
Feedback	.007	0.29	.009	0.36
Participant Utility Reactions	NA	NA	.306	11.92**
Factors Excluded from equation				
Personal Capacity for Transfer				

** = $p < .01$, * = $p < .05$

Despite being the final factor entered, Participant Utility Reactions had the strongest Beta of all factors entered into the equation (Beta = .306, $t = 11.92$, $p < .01$). In addition, the entry of participant utility reactions resulted in Transfer Design being eliminated as a significant contributor to the regression analysis. The standardized beta for Transfer Design was reduced from 0.148 ($t = 5.65$, $p < .01$) to 0.023 ($t = .853$, ns). This is not surprising given the strong correlation between Transfer Design and participant utility reactions shown in Table 2 and suggests a great deal of shared variance between participant utility reactions and Transfer Design.

Discussion

Forcing participant utility reactions to be entered last into the regression equation limited the opportunity for them reactions to contribute to the regression analysis. Despite this, Participant Utility Reactions still contributed significantly to predicting Motivation to Transfer. While the increase in the multiple-R was relatively small, it was a significant increase in the predictive power of the model. It should be noted that the large sample size made for a rather robust analysis with sufficient statistical power to detect even small effects. Perhaps if this study were replicated on a smaller sample, participant utility reactions may not contribute significantly to the regression equation.

Despite the limitations, these results raise two critical issues. First, what could Participant Utility Reactions contribute that is not accounted for in the other Transfer of Learning constructs? The results, while not providing direct evidence, hint at a possible answer. The correlational analysis indicates that Participant Reactions are more closely associated with Ability and Motivational constructs (including Secondary influences) than with the Environmental constructs. Ability and Motivation are largely antecedent constructs, representing what the participant and the program bring to the learning process.

In contrast, perceptions of the Environment constructs, while formed earlier, are largely directly experienced after a training program. It may be that Participant Utility Reactions are associated with yet un-conceptualized antecedent constructs associated with transfer of learning or that utility reactions serve some sort of moderating role with HRD outcomes of learning and performance, which has been proposed in earlier transfer of learning literature (Holton, 1996; Noe & Schmitt, 1986). Further research might help clarify this and ultimately strengthen HRD's understanding of evaluation and transfer. However, it should also be noted that the correlation analysis does suggest that there is a great deal of shared variance between Participant Utility Reactions and all of the LTSI factors. It may be that participant utility reactions operate as a kind of summary judgment, particularly for the Ability factors. However this summary judgment would have limited utility in diagnosing problems with learning transfer (Holton et al, 1998).

The second issue raised by this analysis concerns the value of Participant Utility Reactions given the small contribution to the prediction of Motivation to Transfer. Participant Utility Reactions are broad, vague, and therefore, not a very useful measure for identifying and diagnosing the causes of transfer (or lack thereof). Their relatively small contribution to the overall predictive power of transfer motivation suggests that utility reaction measures serve little purpose in the analysis of learning outcomes. While Participant Utility Reactions may appear to be a simple substitute for the general characteristics of Ability and Motivational constructs, their usefulness is limited in predicting whether or not learning will transfer to the work place or in determining facilitators/barriers to transfer.

Finally, this analysis showed the degree to which Participant Utility Reactions contributed to predicting motivation to transfer learning, not actual performance outcomes. Given previous research cited above, we would expect Participant Utility Reactions to have even less of an impact on actual performance. While we can not assess utility reactions' impact on learning in this analysis, these results clearly suggest that they are unlikely to have much, if any, impact on transfer of learning to job application.

This research contributes additional evidence that directly speaks to the validity of utility reaction information, given knowledge of other predictors of learning transfer and HRD outcomes. The evidence provided here helps us to better understand what is involved in the transfer of learning process, thus, helping HRD professionals to steer resources towards those things that can actually improve the effectiveness of an organization's performance improvement efforts. It is hoped that this will further inform HRD professionals in their use of various frameworks for categorizing training criteria as well as provide added theoretical undergirding for the movement towards new approaches to training evaluation.

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Mixed Methods: The Value of the Qualitative Perspective in Transfer of Training Research

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Qualitative data can often help elaborate the meaning of statistical findings and provide insight on causal factors. This study lends support for a mixed method approach in transfer of training research by demonstrating how a qualitative method, the analysis of data from semistructured interviews using conceptually ordered matrices, can illuminate quantitative data gathered from the same setting.

Keywords: Transfer, Qualitative, Mixed Methods

Mixed method evaluation designs continue to generate debate in the research literature (Greene & Caracelli, 1997). The purists (e.g., Guba & Lincoln, 1989) argue against mixing quantitative and qualitative methods, while others (e.g., Patton, 1988) support a more pragmatic approach, viewing methodological decisions, including the use of mixed designs, to be dependent on the content and needs of the study.

The purpose of this paper is to lend support to the pragmatic view by providing an example of how a qualitative method, the analysis of data from semistructured interviews through conceptually ordered matrices (Miles & Huberman, 1994), can illuminate quantitative data gathered from the same setting in a dissertation study (May, 1998). A brief summary of the research problem and questions appears first. This is followed by a synopsis of the methodology and findings for both the quantitative and qualitative components of the study, with emphasis given to the qualitative process. The paper then provides some examples of insights gained from the qualitative data and concludes with a discussion of the implications for HRD research on transfer of training.

Research Problem and Theoretical Model

The research problem deals with *transfer of training*, defined as the effective and continuing application of newly acquired skills on the job (Broad, 1997; Ford & Weissbein, 1997). Enormous investments in training are believed to be largely wasted because of inadequate transfer, especially in the "soft skills" area of management development such as interpersonal communication and negotiation skills training (Georges, 1996). A widely respected theoretical model for analysis of the transfer problem (Baldwin & Ford, 1988) suggests that transfer is a function of three factors: trainee characteristics, learning retention, and work environment. Learning retention, in turn, is impacted by training design and also influenced by trainee characteristics and the work environment. The transfer equation is considered to be systemic and complex, with many variables affecting the ultimate generalization and maintenance of newly learned skills.

A number of recent studies have begun to isolate important variables in the components of the Baldwin and Ford model (see Ford & Weissbein, 1997). However, examination of the transfer of training literature reveals continued research gaps. Of particular concern is the lack of current research on the training design component *conditions of practice*, especially within the delivery method of behavior modeling training. This is significant because behavior modeling is currently the primary training design for delivery of supervisory interpersonal skills training in business today (Russ-Eft & Zenger, 1995) and the practice component has been called "the crux" of the behavior modeling process (Pescuric & Byham, 1996, p. 29). Yet, as noted by Salas, Cannon-Bowers, and Kozlowski (1997), there is little empirical research on the mechanisms and principles of skill practice in relation to both learning and transfer in a field environment. This is especially true for the more complex interpersonal skills that include significant cognitive components such as active listening and negotiation skills (Stevens & Gist, 1997).

Research Questions and Hypotheses

This study therefore undertook to build a theory-based practice protocol and test its effect on learning and transfer of a complex interpersonal skill taught in a behavior modeling training program in a field setting. Three research questions were addressed: (a) What theoretical framework can guide the development of a practice protocol for

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learning a complex interpersonal skill, (b) how can an effective practice protocol be operationalized; that is, what tools and systems are needed to make the protocol effective in the workplace, and (c) given equal practice, what is the effect of the practice design on learning and transfer when compared to traditional behavior modeling practice sessions?

Anderson's (1983; 1995) ACT* theory of cognitive architecture provided the theoretical basis for the practice protocol. Anderson's theory proposes that memory is composed of three major structural components and their interlinking processes: working memory, declarative memory, and production memory. Given the ACT* theory of cognitive structure, skill acquisition is believed to proceed through three stages: (a) a cognitive stage, in which a description of the procedure is learned (declarative knowledge); (b) an associative stage, in which the facts are compiled and integrated with a method for performing the skill (procedural knowledge); and (c) an autonomous stage, in which the skill becomes more fluent and automatic. It is this third stage that is crucial for competent performance (Howell & Cooke, 1989), where component skills become compiled and automated so that conscious process capacity can be devoted to the more demanding aspects of complex tasks. Goldstein (1993) described such automaticity as a "crucial point in instructional theory" (p. 110). According to Anderson, the critical factor that determines both the accessibility of declarative knowledge and the performance of procedural knowledge is the strength of the encoding of this knowledge in memory, which basically reflects the amount and type of practice.

Given this theoretical framework, a literature review, which included both historical behaviorist research on the conditions of practice and recent research on practice in the fields of cognitive and educational psychology, yielded five practice design principles:

1. Develop a criterion checklist that clearly describes the key behaviors that make up each component skill set. Arrange the behaviors on the checklist in order of difficulty within each component (Blank, 1982).
2. Use progressive part-task role-play practice of the component skill sets to develop and compile procedural knowledge. Then integrate the component skills with guided whole task role-play practice (Proctor & Dutta, 1995).
3. In the whole-task practice, practice to mastery (one errorless performance of all criteria) then continue practice to a minimum of 50% overlearning (Driskell, Willis, & Copper, 1992).
4. Use video feedback to provide knowledge of results after each practice round (Ilgen & Moore, 1987; Rothstein, 1980).
5. Use reciprocal teaching techniques to scaffold learners, prompt elaboration for memory retention, and foster use of higher level cognitive strategies (Palincsar & Brown, 1984).

These principles were synthesized into a practice protocol, termed a *mastery practice lab*, and implemented in a field environment to test the following hypotheses: trainees participating in the mastery practice design, when compared to trainees participating in the traditional workshop practice design, will have (a) higher cognitive retention of the listening model, (b) better performance on behavioral demonstrations through role-play, and (c) greater transfer of behavior as measured by perceptions of coworkers.

Quantitative Component: Methods and Results

Method

Participants in the study were 38 first line supervisors and managers at a consumer product manufacturing plant located near Atlanta, Georgia. The training program focused on active listening skills. The study employed a pretest-posttest control group design with participants randomly assigned after a basic introductory workshop on listening skills to one of two conditions: mastery learning lab (test group) and conventional workshop practice (control group). Dependent measures included knowledge retention, behavioral skill demonstration, and far transfer to the workplace. Knowledge retention was measured by a free-recall test. Behavioral skill demonstration was evaluated by rating videotaped role-plays against a criterion checklist. Far transfer was assessed by use of the Listening Practices Feedback Report (LPFR), a multirater 360-degree survey instrument which has been found to be a reliable measure of listening in the workplace (Emmert, Emmert, & Brandt, 1994).

Results

A one-way analysis of covariance (ANCOVA) was conducted on each dependent measure to determine whether the posttraining results for the two groups differed after adjustments were made for pretraining differences. The ANCOVA procedure found a significant difference between groups for the two learning measures, indicating the mastery practice condition made a positive difference in knowledge retention and the ability to demonstrate the key listening behaviors. However, in terms of practical significance, learning in both groups fell short of acceptable levels. In regard to the transfer measure, there was no significant difference between groups and no significant change from pretraining conditions.

Qualitative Component: Methods and Results

Method

At the conclusion of the study, semistructured interviews were conducted with 36 of the 38 participants to obtain qualitative data on the dynamics of the learning and transfer process related to the two training conditions. The interviews were approximately 45 minutes in length and were conducted during a final debriefing that included a review and discussion of the individual's performance data in comparison to group averages. Given the exploratory nature of the study, particular emphasis was placed on understanding the participants' views of the practice experience during training, the nature of their behavior changes, and the factors that may have influenced their efforts to transfer the training to the workplace.

The interview responses to each question were coded and categorized according to underlying concepts. Conceptually ordered displays (Miles & Huberman, 1994) were then constructed for each question to organize themes within a 2 x 3 x 2 matrix: (a) by group (mastery or conventional), (b) by performance on a composite index of the dependent measures (upper quartile, middle range, or lower quartile), and (c) by relevant perspective (e.g., personal or environmental). A concept mentioned by three or more respondents across all groups and performance levels was considered to be a possible conceptual theme and was included in the appropriate matrix block along with the number of respondents contributing to that theme and representative quotations from the interviews. Two examples of the resulting conceptual matrices are shown in Tables 1 and 2.

Results

The posttraining interview data revealed several themes across both groups and across all performance levels, which helped in the interpretation of the quantitative results. These themes were:

1. the issue of poor execution of the role-play practices during the conventional workshop,
2. the shallow depth of learning, with on-the-job application restricted generally to the simpler aspects of the listening model,
3. the abundance of barriers, both personal and environmental, that limited application of the listening skills in the workplace, and
4. the need for on-going reinforcement after the training.

In addition, only the participants in the high performance group mentioned one unique theme: the desire to learn. It is significant that every participant in the high performance group (N = 8) spontaneously mentioned and provided examples of their personal desire to learn, while this trait was never mentioned by any of the participants in the middle range or low quartile performance groups.

Examples of the Value of the Qualitative Perspective

Kraiger, Ford, and Salas (1993) note that there is an important difference between the concepts of training evaluation and training effectiveness. Training evaluation focuses on whether training leads to the desired level of proficiency. Training effectiveness, on the other hand, deals with the broader issues involved in understanding why training did or did not lead to the desired level of proficiency. Qualitative data, when combined with quantitative data, can often help elaborate the meaning of statistical findings and provide insight on causal factors (Swanson,

Watkins, & Marsick, 1997). For example, the results on the far transfer measure in this study were disappointing. There was no significant change in performance on the LPFR listening scores from pretest conditions for either group. While the level of learning and even the management of the survey process itself may have contributed to this result, the qualitative data helped provide valuable and practical insights on why transfer may not have occurred. Two examples will be provided here, drawn from Tables 1 and 2, which lend support to the importance of work environment factors and personal characteristics in the Baldwin and Ford (1988) model.

Work Environment Factors

An examination of the organizational transfer climate literature (May & Reilly, 1997) revealed that the climate factors which support or hinder transfer tend to cluster into two related dimensions: one social or interpersonal in nature and the other reflecting structural factors in the organization. The interviews conducted in this current study did not reveal any significant issues with the social factors such as supervisor or peer interaction in the organization. However, there were problems with the structural factors in the organization that may have hindered transfer.

The structural dimension of transfer climate includes such factors as work flow and job design (Ford, Quinones, Sego, & Sorra, 1992) and situational constraints such as the lack of resources, including information, tools, supplies, and time (Tziner, Haccoun, & Kadish, 1991). In addition, there are cultural factors that communicate the extent to which a company values and emphasizes learning as part of everyday work life (Tracey, Tannenbaum, & Kavanagh, 1995). The interview results from this current study provide additional evidence for the powerful influence of these structural factors in the work environment and how they can create a negative transfer climate (see Table 1). For example, there was a pervasive "time bind" for almost all of the participants, related, in part, to their large number of direct reports (mean = 28) and also to constant work crises stemming from the on-going introduction of new work processes and production equipment. The arrangement of workspace, which required supervisors to share office space, also contributed to a high level of distractions. This simply was not a work climate conducive to application of a counseling type listening model taught in the workshop. It is clear from the posttraining interviews that training alone, even with a robust practice design, is not a sufficient means of improving and maintaining performance. This qualitative data therefore supports the need for a sufficiently valid and reliable measure of transfer climate. Such a measure could be used as a diagnostic tool to identify when an organization is ready for a training intervention and could provide information to guide pretraining interventions aimed at increasing training effectiveness. Holton and his colleagues (Holton, Bates, & Leimbach, 1998) have recently developed a transfer climate instrument, called the Learning Transfer Questionnaire (LTQ) which appears to meet this need.

Trainee Characteristics

A number of individual characteristics have been empirically linked to transfer, including cognitive ability and aptitude (Ford et al., 1992), locus of control (Quinones, Ford, & Teachout, 1995), and self-efficacy (Gist, Stevens, & Bavetta, 1991). One recent study appears to be the first to apply a personality dimension termed *conscientiousness* to the study of transfer. Stewart, Carson, and Cardy (1996) found a significant correlation between conscientiousness and supervisor performance evaluations of self-directed customer service behavior. Conscientiousness includes facets of organizational skills, persistence, need for achievement, and self-discipline (McCrae & Costa, 1989). The posttraining interviews in this current study revealed a similar theme, termed *desire to learn*, that seems related to the construct of conscientiousness (see Table 2). It was significant that all 8 of the top quartile performers talked about an innate desire to learn while no other interviewees mentioned this factor. These performers exhibited this desire by taking steps on their own initiative to improve their learning, such as posting the listening model in their work area, sharing with their subordinates, and periodically reviewing the training material without prompting. Thus, the construct of conscientiousness and other related personality factors may be a significant consideration in the study of transfer. It seems reasonable to expect that personality factors such as conscientiousness and openness to experience might not only be predictive of future job performance but also relate to an individual's motivation to learn, learning strategies, skill acquisition rates, and training transfer (Ford & Weissbein, 1997). Advanced diagnosis of relevant personality variables could lead to tailored practice designs and posttraining support systems customized to individual needs.

Table 1. Example Conceptual Matrix: "Factors that Prevent Effective Listening"

Group by Performance Rank (N)	**Personal** <u>Theme</u> **(# mentioning): "Example quotes"**	**Environmental** <u>Theme</u> **(# mentioning): "Example quotes"**
Upper Quartile Performance		
Mastery (5)	<u>Biases</u> (4): "My personality; I get offended when person is inflexible." "Sometimes don't want to hear other person's priorities." "Have a hard time with people who have 'attitudes'." "Got ticked; didn't listen."	<u>Time Bind</u> (3): "Behind on production; pressed for time." "Pushed for deadlines, start cutting corners, getting short with people." "When in hurry, on way to meeting, hard not to blow off."
Conventional (3)	<u>Biases</u> (1): "More an internal issue – who other person is, what level."	<u>Distraction</u> (2): "Lots of things going on; hard to concentrate and focus." "Distracted – office we're in; people coming in and out; telephones ringing."
Middle Range Performance		
Mastery (10)	<u>Personal Worries</u> (2): "Personal worries prevent me from focusing."	<u>Time Bind</u> (9): "Fast paced environment." "Deadlines." "Too much on plate." "Completely overwhelmed." "Hectic." "Pressing time issue." <u>Work Crisis</u> (2): "Crisis on the production floor." "Confusion, chaos – like when machine goes down." <u>Distraction</u> (1): "Phone calls, people coming in office."
Conventional (10)	<u>Biases</u> (5): "Judgmental of 'whiners'." "Depends on who person is." "Some people just want attention." <u>Personal Worries</u> (1): "Lots of issues outside the job – single parent."	<u>Time Bind</u> (4): "Always juggling bunch of balls." "Reports, meetings, people constantly wanting information." "Time constraints." "43 direct reports; can't even take time to write things down." "Pace!" <u>Work Crisis</u> (1): "Pressure, problems – such as equipment down." <u>Distraction</u> (3): "Interruptions constant." "Phone ringing." "People in and out."
Lower Quartile Performance		
Mastery (2)	<u>Biases</u> (1): "When people are belligerent."	<u>Distraction</u> (2): "Have someone in my office; other people trying to get my attention." "Soon as I walk out to do something, 2 or 3 people approach me."
Conventional (6)	<u>Biases</u> (2): "Tone of voice can turn me off." "No patience with bullshit." <u>Personal Worries</u> (1): "On 3rd shift; wrong for me – people dragging, single parents."	<u>Time Bind</u> (1): "Someone catches me on way out the door to meeting; rushed." <u>Work Crisis</u> (1): "Depends on number of fires trying to put out." <u>Distraction</u> (1): "Tremendous amount of interruptions."

Table 2. Example Conceptual Matrix: "Participants' Final Thoughts"

Group by Performance Rank (N)	**Theme (# mentioning): "Example quotes"**
Upper Quartile Performance	
Mastery (5)	Desire to Learn (5): "Difference for me – real desire to learn; willing to try." "Have desire to improve." "Made mnemonics out of model; posted model in office." "Put model on my filing cabinet by my desk." "Put model on my bulletin board; shared with my people what I'm working on." Need for Reinforcement (1): "Like getting together each month during research project; come back and refresh; makes me review." Workload (1): "What happens to most, go back to work, so much on plate, decisions to be made – forget about training."
Conventional (3)	Desire to Learn (3): "I do a lot of study on my on; feel responsibility to progress; posted model where could see on continuing basis." "What works for me, must go out and do; apply soon afterward." "Want to do it right." Need for Reinforcement (1): "Coming back from time to time – pretraining, workshop, post video, interview – all reinforcement."
Middle Range Performance	
Mastery (10)	Need for Reinforcement (5): "Has to be subsequent follow-up; refreshers to reinforce; otherwise won't retain." "Multiple meetings helpful." "Follow-up – meeting 3-4 times; reinforced vs. 'flavor of the month' type thing." "Follow-ups forced me to review." "Came to workshop, left, went back to office, tossed workbook on pile; would not have throught about it again if we did not have the follow-up appointments." Workload (2): "Don't know how could have crammed more in – listening, team concepts, SOPs, safety, violence in the workplace." "Training competing with so many things."
Conventional (10)	Need for Reinforcement (5): "Must keep in front, on going; refreshers over period of time." "Follow-up is key. Must revisit multiple times." "Follow-up is absolutely necessary." "Tend to put book on shelf if no follow-up / reinforcement." Workload (1): "Lots of direct reports. So much stuff coming at you."
Lower Quartile Performance	
Mastery (2)	Need for Reinforcement (1): "What's helped me in past are reinforcers – cube on the desk as reminder."
Conventional (6)	Need for Reinforcement (2): "How can we tie into reward system? All would put forth more effort. Example: Safety a joke around here until became item on evaluation." "If never bring up again, won't be used. Must have constant reminders, reinforcement, periodic refreshers." Workload (3): "Going through lots of things – overload." "Number of people reporting is important." "So damn busy. No time to do anything well. Making me crazy."

Implications for HRD Research on Transfer of Training

From a theoretical perspective, the HRD profession is still in the early stages of model building in regard to training transfer. We are seeking to conceptualize a transfer system in terms of variables and relationships that will be intellectually manageable and then examine the components with strong research designs until a valid representation of the real system emerges. Such a model can then provide a basis for effective HRD practice and prescriptive interventions. The qualitative examples in this study provide further evidence that transfer is a complex, systemic

issue and quantitative data alone will not give us the insights we need. As noted by Chen (1997), mixed methods can compensate for the inherent weaknesses of quantitative data collection in a work environment, triangulate the evaluative evidence, provide richer and more accurate understandings, and even expand the scope of the study. This study lends support to the pragmatic approach of integrating quantitative and qualitative evaluation paradigms in transfer of training research.

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Theories Supporting Transfer of Training

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The purpose of this paper is to review theories and conceptual frameworks necessary to describe three factors affecting transfer of training. This information helps HRD professionals understand why people desire to change their performance after attending a training program; what training design contributes to people's ability to transfer skills successfully, and what kind of organizational environment supports the transfer. This paper also provides HRD implementation strategies to help organizations achieve a high level of transfer.

Keyword: Transfer of Training

Today we believe that competitive success is achieved through people (Pfeffer, 1994). It follows, then, that the skills and performance of people are critical. Many organizations spend a lot of money on training, believing that training will improve employees' performance and, hence, increase the firm's productivity. In 1997, organizations with more than 100 employees are estimated to have spent $58.6 billion in direct costs on formal training. And with the inclusion of indirect costs, informal on-the-job training, and costs incurred by small organizations, total training expenditures could easily reach $200 billion or more annually (Holton, Ruona, & Leimbach, 1998). However, unsettling questions continue to be raised about the return on this investment.

There is strong consensus that acquisition of knowledge, skills, behaviors, and attitudes through training is of little value if the new characteristics are not generalized to the job setting and are not maintained over time (Kozlowski & Salas, 1997). In other words, training is useless if it cannot be translated into performance. According to Swanson (1995), for HRD to become a core business process, performance is the key. Transfer of training is a core issue with respect to linking individual change to the requirements of the organizational system. Therefore, if we believe that training truly makes a difference in organizational and individual performance, we must understand how to support transfer of training in organizations.

A Transfer of Training Model

Traditional approaches to transfer of training tend to consider it as a horizontal linkage that connects training and performance environments. A comprehensive review (Baldwin & Ford, 1988) classified the factors affecting transfer of training into three categories: (1) training inputs, including trainee characteristics, training design, and work environment; (2) training outputs, consisting of learning and retention; and (3) conditions of transfer, which focus on the generalization and maintenance of training. All three sets of training input features are seen as affecting learning and retention, which directly influence generalization and maintenance. However, the purpose of training and development is to improve performance (Swanson, 1995). Learning is of little value to organizations unless it is transferred to performance (Holton, Bates, Seyler, & Carvalho, 1997). Kuchinke (1995) also argued that learning is a means, not a primary organizational outcome. Learning is an internal behavior, whereas performance is usually a more external one. Therefore, training outputs should emphasize performance, not just learning.

Holton (1996) provided a conceptual evaluation model of training focused on individual performance. This model proposes three primary outcomes of training intervention: learning, individual performance, and organizational results. These outcomes are defined, respectively, as achievement of the learning outcome desired in an HRD intervention, change in individual performance as a result of learning being applied on the job, and results at the organizational level as a consequence of change in individual performance. Figure 1 illustrates Holton's transfer of training model that suggests three crucial factors that affect training transfer--motivation to transfer, transfer climate, and transfer design.

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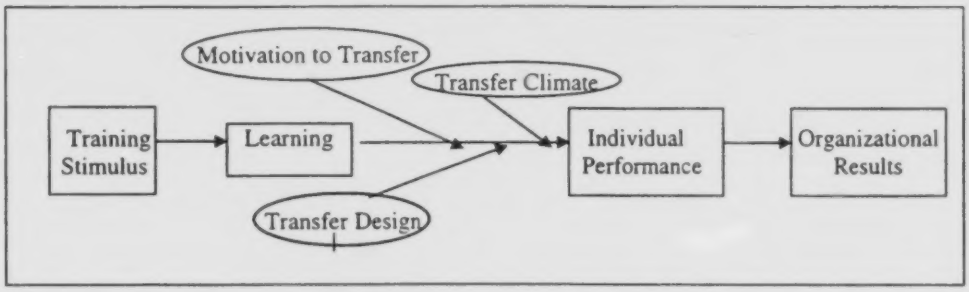
Figure 1. Holton's (1996) Factors Affecting Transfer of Training



Statement of the Problem

Individual performance is at the core of Holton's transfer of training model. Learning is expected to lead to individual performance change only when the three primary influences on transfer behavior are at appropriate levels. This model emphasizes three factors that affect implementation and transfer. However, this model needs theories and a conceptual framework to explain:

- why people desire to change their performance after attending a training program
- what training design contributes to people's ability to transfer skills successfully
- what kind of organizational environment supports people as they apply the knowledge, skills and attitudes gained in a training program to their job.

To enhance transfer of training, the HRD consultant must understand theories of evaluation and performance. Without this, it is difficult to conduct the high-quality research that leads to effective solutions to transfer-of-training problems. Therefore, to access theories and conceptual frameworks necessary to describe the three factors affecting implementation and transfer of training and the HRD implementation strategies to help organizations achieve a high level of transfer, this paper will address theories of motivation of transfer, theories of transfer design, theories of transfer climate, and conclusions and recommendations.

Theories on Motivation of Transfer

Motivation to transfer was hypothesized in Holton's (1996) model to connect learning with individual performance change. Motivation to transfer can be described as trainees' desire to use the knowledge and skills mastered in the training program on the job (Noe & Schmitt, 1986). Behavioral change will likely occur for trainees who learn the material presented in training and desire to apply that new knowledge or skills to work activities. To support the degree of transfer of training desired, it is important to understand why individuals choose to apply their knowledge, skills, and attitudes in their workplace. Several theories of human behavior exist to help us understand and predict behaviors that contribute to performance at work. They include the theories of (1) expectancy (2) equity, and (3) goal setting.

Expectancy Theory

Expectancy theory, presented by Porter and Lawler, describes the relationship between employee satisfaction and performance (cited in Moorhead & Griffin, 1992). Porter-Lawler's model includes abilities, traits, and role perceptions (how well the individual understands his or her job). At the beginning of the motivation cycle, effort is a function of the value of the potential reward for the employee (its valence) and the perceived effort-reward probability (an expectancy). Effort then combines with abilities, traits, and role perceptions to determine performance.

Performance results in two kinds of rewards. Intrinsic rewards are intangible--a feeling of accomplishment, a sense of achievement, and so forth. Extrinsic rewards are tangible outcomes, such as pay or promotion. The individual judges the value of his or her performance to the organization and uses social comparison processes to

form an impression of the equity of the rewards received. If the rewards are regarded as equitable, the employee feels satisfied. In subsequent cycles, satisfaction with rewards is influenced by the value of the anticipated rewards, and actual performance is influenced by perceived future effort-reward probabilities.

Equity Theory

Equity theory is based on the simple premise that people want to be treated fairly (Adams, 1963). Vroom (1964) recognized that individuals seek equity in their jobs; thus, job satisfaction reflects the extent to which rewards received match the rewards the employee believes should be received.

This theory rests on three main assumptions: (1) people develop beliefs about what constitutes a fair and equitable return for the contributions they make to their jobs; (2) people compare their own returns and contributions to those of others; and (3) beliefs about unfair treatment (inequity) create tension that motivates people to reduce that tension (Carrell & Dittrich, 1978). Mechanisms for reducing perceived inequities include: (1) cognitively distorting the inputs or returns/outcomes; (2) acting on the comparison with others to change his/her inputs or outcomes; (3) changing one's own inputs or outcomes; (4) changing the person with whom a comparison is made; and (5) leaving the situation where inequity is felt (Campbell & Pritchard, 1976). Equity theory predicts that individuals will choose a method of inequity reduction that is personally least costly (Adams, 1963). However, predicting which mode will be seen as least costly has proven to be quite difficult.

Goal-Setting Theory

Goal-setting theory suggests two cognitive determinants of behavior: intentions and values. Intentions are viewed as the immediate precursors of human action. The second cognitive process manifests itself in the choice or acceptance of intentions and subsequent commitment to those goals (Locke, 1968). It is the recognition that instructions will affect behavior only if they are consciously accepted that makes goal setting a cognitive theory of motivation. A goal is that level of performance the individual is trying to accomplish; it is the object or aim of behavior. According to Locke (1968), goals direct attention and action. Additionally, they mobilize effort in proportion to perceived requirements of the goal or task (Locke, Shaw, Saari, & Latham, 1981). Therefore, goal setting, like expectancy theory, may explain how and why behavior is facilitated or restrained in the pre-training, training, and post-training processes.

Impact of These Theories on Transfer Motivation

According to these theories, trainees leave training programs with different levels of motivation to utilize their learning on the job. According to Holton (1996), influences on transfer motivation fall into four categories: intervention fulfillment, learning outcomes, job attitudes, and expected utilities. All of these categories can be explained by expectancy theory, equity theory, and goal-setting theory as follows:

Intervention fulfillment. Tannenbaum, Mathieu, Salas, and Cannon-Bowers (1991) conducted a rigorous study and found that training fulfillment played a significant role in understanding training motivation. Training motivation is similar to motivation to transfer because it is a measure of the trainees' perception of the relationship between training success and future job performance (Holton, 1996). This can be explained by goal-setting theory and expectancy theory--if individuals perceive that what they learn is relevant to their goal (what they need to know) or an intervention has met their expectations and fulfilled their need for performance-related learning, they will be more motivated to transfer learning into on-the-job performance.

Learning outcomes. Tannenbaum et al. (1991) also found that performance during training had an independent relationship with post-training motivation. Expectancy theory (Vroom, 1964) suggests that individuals will be more motivated if they believe that their efforts will lead to enhanced performance. More successful learners would be expected to feel better able to perform and, therefore, more motivated to transfer. In contrast, less successful learners would be expected to be less motivated to transfer learning (Holton, 1996).

Job attitudes. Expectancy theory, goal-setting theory, and equity theory would lead us to speculate that people with high commitment and job satisfaction would be more likely to exert effort to transfer. Tannenbaum et al. (1991) also found that participants with more positive job attitudes would be expected to be more motivated to transfer learning to performance.

Expected utilities or payoffs. Clark, Dobbins, and Ladd (1993) found that trainees who perceived training to have more job and career utility were more motivated. These findings are consistent with expectancy theory, which

states that individuals will be more motivated to transfer if they perceive that their effort will lead to rewards that they value (Porter & Lawler, 1968).

Theories for Training Transfer Design

According to Holton (1996), one cause of failure to transfer is that training design rarely provides for transfer of learning. That is, cognitive learning may well occur, but program participants may not have an opportunity to practice the training in a job context or may not be taught how to apply their knowledge on the job. So, the training itself can have a direct influence on transfer of training. Thus, it is important to understand the theories that provide information about the conditions necessary to achieve positive transfer. The two major viewpoints that describe the conditions necessary for transfer are the identical elements and the principle theories.

Identical Elements Theory

The theory of identical elements was proposed by E. L. Thorndike and R. S. Woodworth (1901). According to the identical elements theory, transfer is improved by increasing the degree of correspondence between the training setting stimuli, responses, and conditions and those related factors operative in the performance setting. Holding (1965) summarized this work on transfer by detailing the type of transfer expected based on the similarity of the stimuli and responses.

Holding (1965) explained that, if the task is identical in both training and transfer, trainees are simply practicing the final task during training, and there should be high positive transfer. The second case assumes that the task characteristics--both stimuli and responses--are so different that practice on one task has no relationship to performance on the transfer task. The third case is common to many training programs. The stimuli are somewhat different in the training and transfer settings, but the responses are the same. In this case, the learner can generalize training from one environment to another. The fourth case presents the basic paradigm for negative transfer; if the response to identical stimuli in the two settings is different, negative transfer results.

Principles Theory

The principles theory suggests that training should focus on the general principles necessary to learn a task so that the learner may apply them to solve problems in the transfer environment (Goldstein, 1986). This theory suggests that it is possible to design training environments without too much concern about their similarity to the transfer situation, as long as it is possible to utilize underlying principles.

Near and Far Transfer

According to Laker (1990), there are transfer of training can be near or far. Near transfer is the application of learning to situations similar to those in which initial learning has taken place; far transfer is the application of learning to situations dissimilar to those of the original learning events. Whether one achieves near or far transfer appears to be dependent on which theory of transfer guides the development and presentation of the training program. Research reviewed by Clark and Voogel (1985) suggested that the following recommendations would increase the likelihood of near transfer:

- The more the training content and program reflect the workplace, the more successful the near transfer (Baldwin & Ford, 1988).
- The greater the specificity as to where and how the training is to be applied to the job, the more successful the near transfer (Clark & Voogel, 1985).
- The more overlearning of the task is encouraged, the more successful the near transfer (Noe, 1986).
- The more the procedural nature of the task is emphasized, the more successful the near transfer (Clark & Voogel, 1985).
- The more the application of the training is restricted to only those areas for which the trainee was prepared, the more successful the near transfer (Clark & Voogel, 1985).

Therefore, the identical elements theory influences the acquisition of near transfer. According to Spitzer (1984), near transfer would be the objective of short-term skill development that can be applied immediately to improve performance in one's present position. Near transfer would seem to be most desired when pursuing technical training (Laker, 1990), because technical training usually teaches specific behaviors and procedures applicable to the individual's current job. On the other hand, the theory of transfer through principles emphasizes the importance of creating variety and explaining the "why" that underlies what an individual is being taught. From this perspective, the following factors may hypothetically influence the acquisition of far transfer:

- The better trainees understand the underlying principles, concepts, and assumptions of the skills and behaviors they are learning, the more successful the far transfer (Goldstein, 1986).
- The more trainees practice in different contexts and use novelty in their practice exercises, the more successful the far transfer (Baldwin & Ford, 1988; Goldstein, 1986).
- The more encouragement trainees receive during training to discuss and apply the training in situations of their own choosing, the more successful the far transfer (Noe, 1986).
- The more encouragement trainees receive after training to apply the training to situations other than those for which they were trained, the more successful the far transfer (Goldstein, 1986).

Principles theory is critical to far transfer because knowledge can be abstracted and connected to new problems. If trainees can understand the principles and concepts and if they have a chance to practice exercises and apply situations in training programs to their workplace, they are more likely to apply their newly acquired skills and behaviors when they are faced with new challenges and unfamiliar problems. According to Laker (1990), far transfer might be most attractive for management development or creative problem solving as these types of training are frequently directed toward long-term goals and future positions.

In conclusion, near transfer and far transfer can be viewed as a series of goals or objectives of training and should be reflected in the content and design of training. So, it is critical to identify in advance the situations in which training is to be applied. However, if we accept the hypothesis that training strategies differ in terms of the types that facilitate near transfer versus far transfer, it is important to identify which parts of the training content and design represent specific parts of the training program.

Theories Supporting Transfer Climate

Transfer climate was described by Schneider and Rentsch as a "sense of imperative" (cited in Holton et al., 1997) that arises from a person's perception of his or her work environment. It influences the extent to which that person can use learned skills on the job. Transfer climate is seen as a mediating variable in the relationship between the organizational context and an individual's job attitudes and work behavior (Holton et al., 1998). Thus, when learning occurs in training, the transfer climate may either support or inhibit application of learning on the job. Organizational climate is at least as important as learning in facilitating transfer (Rouiller & Goldstein, 1993). The conceptual framework and theory that help to explain how organizational environment supports transfer of training are presented below.

Transfer Climate Framework

Rouiller and Goldstein (1993) offered a conceptual framework for operationalizing transfer climate; they suggested that transfer climate consists of two types of workplace cues, including eight distinct dimensions.

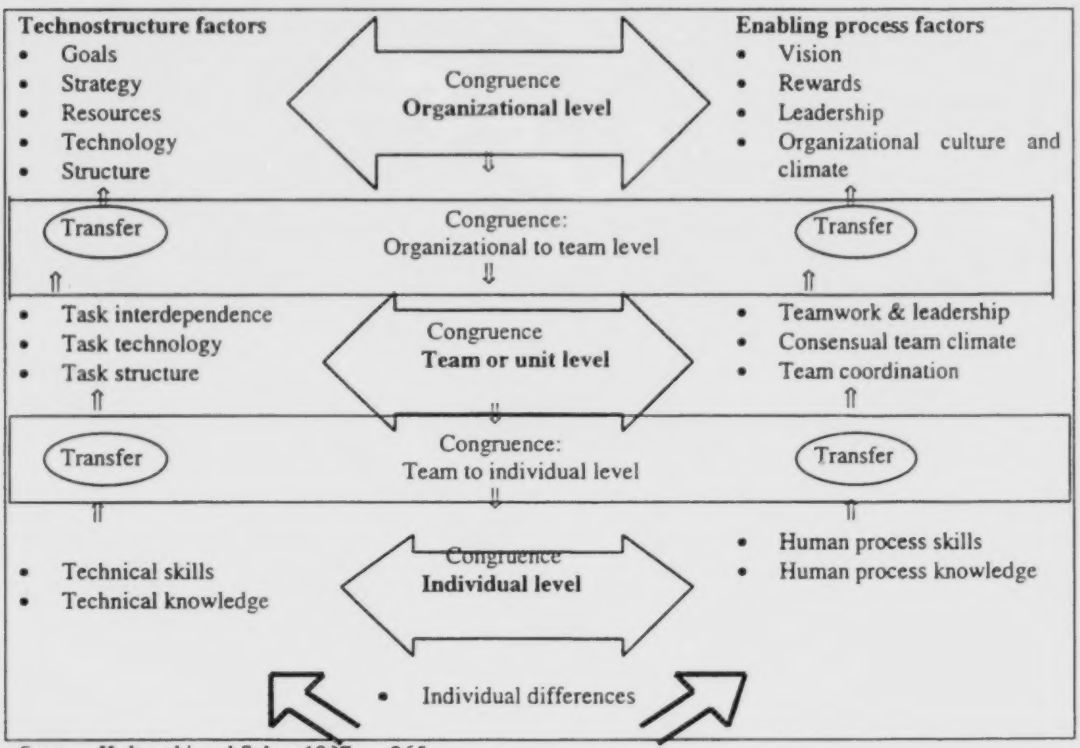
The first set of workplace cues--*situation cues*--remind trainees of opportunities to use what they have learned when they return to work. There are four types of situation cues: goal cues, social cues, task cues, and self-control cues. The second set of workplace cues--*consequence cues*--is the feedback trainees receive after they apply their knowledge, skills, and attitudes gained in the training to their jobs. There are four types of consequences: positive feedback, negative feedback, punishment, and no feedback. Rouiller and Goldstein (1993) used this framework in a study of fast-food restaurant management trainees and demonstrated that the transfer climate added significantly to the explained variance in post-training job performance. They also found that a positive organizational transfer climate appears to be important if transfer of training behavior is to occur.

Organization Theory

According to Kozlowski and Salas (1997), the need for change, the implementation of interventions, and the transfer of trained skills are embedded within the context of work team, sub-units, and organization levels. They propose an organization theory that benefits from the application of concepts drawn from systems-oriented theories. Key concepts that underline the systems framework include: organizations are open to external environmental influences, subsystem events are embedded in the larger systems context or network of relations, and it is impossible to understand complex events in systems by reducing them to their individual elements.

Organization theory enhances the identification of tangible work environment characteristics. Contextual factors exert an influence on individual responses through their perceptions of the organizational environment. This means that important, tangible, and meaningful work environment factors (structure, reward systems, or decision autonomy) are stimuli that underlie perceptions of the context. Under this analysis interpretive perceptions serve as mediating mechanisms to link salient contextual features to individual responses (Kozlowski & Farr, 1988). Three theoretical concepts or themes--levels, content, and congruence--underlie organizational context from the perspective of climate theory and are presented in Figure 2. This framework can be used to identify issues to improve the effectiveness of training implementation and transfer.

Figure 2. A Multilevel Model for Training Implemention and Transfer



Source: Kolowski and Salas, 1997, p. 265.

The dominant feature of the model is the distinction among the levels that comprise the organizational system—individual, team or unit, and organization. Second, the model distinguishes between technostructural and enabling process content which provides a means to identify relevant features that comprise contexts. Third, the framework incorporates congruence as a critical mechanism for conceptualizing configurations or alignments among key variables comprising the organizational system. It addresses the connection of variables within content domains, between content domains, and between levels. Changes in system functioning produced by training interventions are represented by arrows: (a) horizontal arrows illustrate congruence between content areas within levels, (b) central downward arrows signify congruence between higher level embedding characteristics and lower level training

targets, and (c) upward arrows within content areas represent composition processes that link training-induced change at lower levels to higher level change targets.

Training significantly benefits from integration with concepts drawn from organizational theory. According to this theory, trained knowledge, skills, and attitudes at the individual level are embedded in team or unit-level technology, coordination processes, and social system contexts, with broader contextual constraints originating at higher system levels (Kozlowski & Salas, 1997). From this perspective, preparing individuals to accept training-induced change and encouraging them to express their new capabilities in the work environment requires training that is delivered at the appropriate level and is congruent with contextual supports.

Kozlowski and Sale (1997) assert that the transfer processes in this model implicate the pre-training environment as well. If a context does not support or actively discourages the use of new skills prior to the implementation of training, it is unlikely that trainees will be motivated to learn.

Conclusions and Recommendations

All three factors reviewed--motivation to transfer; transfer design; and transfer climate--are significant to support the transfer of training and help HRD professionals to see the causes and effects of transfer of training to enhance the use of appropriate training strategies and lead to higher quality research. In practice, these theories show that systems congruence is essential for transfer. Considerable planning will be required to identify the relevant factors, processes, levels, and linkages implicated by the target training. Establishing the requisite alignments may necessitate simultaneous or phased interventions across several different factors, processes, and systems levels.

HRD professionals should encourage stakeholders of training, such as managers, trainers, and trainees, to work together to ensure that the training investment pays off through full transfer of training by:

- collaborating with key stakeholders in the organization at each step of the process to provide links to strategic goals, reinforce organizational priorities, and support performance-related factors.
- encouraging managers to provide clear performance objectives so that employees know exactly what they are expected to do. Managers should provide the necessary support (resources) for high performance and establish clear rewards for performance. They should provide prompt feedback to let employees know whether their performance meets the established standards.
- assigning high priority to learners as full stakeholders in the design and implementation of training. Groups of learners may be responsible for identifying training objectives; assessing their learning needs; developing action plans; and identifying organization-wide strategies to support full transfer to new contexts.

In addition, based on this review, the following applied research is needed within each organization:

- an examination of systems-wide components that determine whether a training program can yield meaningful change.
- an examination of contextual constraints and barriers that trainees face in applying learning in the workplace.

Finally, the transfer of training model and the review of transfer of training theories can help the HRD professional to understand that many factors affect performance change. Therefore, effective solutions to enhance transfer of training or training effectiveness will require that all of these factors be considered.

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